



Focus on Cleaner Wood Burning

From the Department of Ecology's Air Quality Program

With most home heating systems, everything is pre-set. But with wood heat, you control everything: the type of fuel used, the fire's efficiency, and the amount of air pollution that is produced. You use skill and intelligence because a wood fire needs your attention and management.

Even veteran wood heat users can find ways to have a cleaner burning fire. Less smoke means cleaner air for you, your family, your neighbors and the environment. Plus, the less smoke your fireplace or wood stove produces, the more heat and value you get from your wood.

The fuel: *Keep it dry!*

Wood can seem dry and still contain plenty of water -- up to 50 percent. The moisture in wood makes the fire give off more smoke. On the other hand, dry wood can provide up to 44 percent more heat. It is against state law to burn wood with more than 20 percent moisture content in fireplaces or wood stoves.

Two things work very well to make sure your wood is dry enough: time and cover. Whether you buy wood or harvest your own, follow these tips to get it fire-ready:

- + Split it. The wood will dry best and burn most efficiently if the pieces are three and one-half to six inches in diameter.
- + Cover it. Protect the wood from rain and weather. Stack it loosely-- in layers of alternating directions-- to allow plenty of air circulation. Store it at least six inches off the ground. Visit our web site at <http://www.ecy.wa.gov/programs/air/pdfs/woodsheds.pdf> for plans for a wood storage shed.
- + Give it a year. Wood that has been split, dried and stored under cover for at least one year usually meets the 20 percent moisture content requirement.

The fuel: *Keep it legal!*

Only dry, untreated wood is legal to burn. State law does not regulate the dryness of any wood that is sold. You-- not the seller--are responsible for making sure the wood you put on your fire is dry enough to be legal.

Manufactured logs (pressed sawdust or sawdust/wax) are legal, but be careful to follow the product instructions and to follow the recommendations in your stove owner's manual. Coal with less than one percent sulfur is legal in a coal-only stove.

It is illegal to burn the following in a wood stove, fireplace, or other type of solid fuel burning device:

- + garbage (including diapers);
- + plastic or rubber products;

- + treated wood (including particle or strand board);
- + asphalt-based or waste petroleum products;
- + paints and chemicals;
- + animal carcasses;
- + anything else that normally emits dense smoke or obnoxious odors.

It is legal to burn paper only for starting the fire.

The smoke: *There's a state law on how much!*

State law limits the density of smoke from indoor fires to ensure that people use clean burning techniques. This requirement is called the “20 percent smoke opacity limit.” Opacity means how much your view through the smoke is blocked. One hundred percent opacity means you can't see anything through the smoke. Twenty percent opacity means there is very little smoke and you can see almost perfectly through it. If you use dry enough fuel, the right equipment, and give your fire the right amount of air, there should be no visible smoke from your chimney or stove pipe -- only heat waves.

There are two exceptions to the opacity rule which allow you limited time for denser smoke:

- + *Starting the fire:* You have up to 20 minutes every four hours.
- + *Stoking the fire:* You have up to six consecutive minutes in any one hour period.

The fire: *Give it air!*

The right amount of air gives you a hotter fire and more complete combustion. That translates to more heat, and less smoke and pollution. Here are some cleaner burning tips:

- + *Build small, hot fires.* Don't add too much fuel at one time.
- + *Step outside and check the chimney or flue.* If you can see smoke, your fire may need more air.
- + *Read and follow* the stove manufacturer's instructions.
- + *Don't "bank" the stove* full of wood and damper down the air supply. This wastes wood, produces air pollution, promotes accumulation of creosote (which requires more frequent cleaning and can lead to chimney fires), and yields very little heat. Filling your stove half-full is adequate; it provides enough air space for efficient combustion.
- + *Don't damper down too far.* Allow enough air to reach the wood. (The amount of air to be allowed varies among models and kinds of stoves.)
- + *Make sure your stove is the right size for your home.* Too large a stove will overheat your living space, which will make you want to damper down. This causes added pollution and wastes wood.

If you need this information in an alternate format, please contact Tami Dahlgren at (360) 407-6800. If you are a person with a speech or hearing impairment, call 711, or 1-800-833-6388 for TTY.

- + *Don't burn in moderate temperatures.* Burning when it's too warm outside will make you want to damper down, which causes more pollution and wastes wood.
- + *Don't burn when air currents carry your smoke* to your neighbor's yard or house.

The stove: *Certified is cleaner!*

The stove you use makes a lot of difference when it comes to air pollution. Any stove sold in Washington today (or from 1988 on) must meet certification standards. Certified stoves have passed an emissions standards test at an approved laboratory.

Many older stoves are uncertified -- 87 percent of the wood stoves in Washington, according to the most recent State Energy Office estimates. Owners of uncertified stoves are encouraged to replace them with a less polluting heat source. Compared to new, properly operated certified models, uncertified stoves:

- + produce approximately five times more pollution;
- + use about a third more wood; and
- + deposit more creosote in chimneys, making more frequent cleaning necessary.

Some certified stoves come equipped with catalytic combustors, which burn away pollutants in the smoke at a high temperature. These stoves require special attention to the manufacturer's instructions. Improper use can shorten the life of the catalyst and cause the stove to become more polluting. A worn out catalyst must be replaced immediately. Catalysts generally last one to five years.

Many pellet stoves are certified, but some don't require certification. They produce 90 to 98 percent *less* pollution than a typical uncertified stove. Pellet stoves, while more expensive than cord-wood models, require very little tending to operate. However, they do require regular maintenance as recommended by the manufacturer.

Since January 1, 1992, it has been illegal to install an uncertified wood stove in Washington. Since June 30, 1995, local agencies have had the option to place permanent bans on the use of uncertified stoves in densely populated areas.

Burn bans: *A last resort*

Occasionally, even the best efforts at good burning are not enough. Most of the air pollution in residential areas during the fall and winter comes from burning wood. Nobody likes burning restrictions, but in some areas the combination of weather patterns and population density cause unhealthy levels of wood smoke pollution to accumulate in the air. This problem especially affects residential areas--where most wood stoves are used and where people spend most of their time.

By reducing the pollutants in the air, we can improve the quality of the air. It's that simple. From time to time we may be called upon not to use our wood stoves, fireplaces and other solid fuel burning devices (unless there is no alternate heat source). Currently, burn ban programs exist or are planned in the more densely populated areas of Clark, Cowlitz, Thurston, Pierce, Kitsap, King, Snohomish, Whatcom, Yakima and Spokane counties.

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Restrictions on wood stove and fireplace use are imposed only for the time it takes to get air quality back to a healthier level. You can assist this effort by keeping aware of burn bans. Most radio and TV stations announce local burn bans. Burn bans always apply to uncertified devices; however, sometimes--when air pollution from wood smoke reaches higher levels--certified units must be shut down, also.

If all wood heat users operated certified wood burning devices, burned only dry wood and followed wood burning regulations, burning restrictions would be less frequent and we'd all breathe more easily during the winter.

For more information

Call the Washington State Energy office toll-free Energy Hotline: 1-800-962-9731; OR

Contact your local air quality agency.

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